

REMARKS

Applicants have carefully considered the Examiner's comments set forth in the Office Action of March 17, 2008.

Reconsideration of the Application is requested in view of the amendments and comments herein. Claims 11 and 20 have been amended. The amendments contain subject matter previously found in dependant claims, therefore new subject matter to be examined is being presented and thus should be entered and considered.

The Office Action

Claims 11-18 and 20-28 remain in this application. Claims 19 and 29 have been cancelled.

Claims 20 and 27-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al (In-Mold Functional Coating of Thermoplastic Substrate: Process Modeling, Antec 2001, 255).

Claims 11-14 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. in view of Ladeinde (A Procedure for Advection and Diffusion in Thin Cavities, Computational Mechanics 15 (1995) pp. 511-520, Springer-Verlag, 1995).

Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Ladeinde as applied to claim 13 above, and further in view of Walsh (U.S. Patent 6,099,162).

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen as applied to claim 20 and further in view of Ladeinde.

Claims 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen as applied to claim 20 and further in view of Zuyev (Optimizing Injection Gate Location and Cycle Time for the In-Mold Coating (IMC) Process, Antec 2001).

Claims 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Zuyev as applied to claim 23 above, and further in view of Walsh (U.S. Patent 6,099,162).

I. Rejection of Claims 20 and 27-29 Under 35 U.S.C. 102(b)

The Examiner has rejected claims 20 and 27-29 under 35 U.S.C. 102(b) as being anticipated by Chen et al (In-Mold Functional Coating of Thermoplastic Substrate: Process

Modeling, Antec 2001, 255). The Examiner alleges that Chen teaches the method of claim 20 for optimizing the location of an in-mold coating injection port in a mold so as to minimize the flow time for an in-mold coating composition to flow over at least a part of a molded article. Applicant respectfully traverses the rejection for at least the following reason. Chen does not teach or suggest all limitations in independent claim 20 (and claims 27-29 that depend therefrom).

In particular, the Examiner argues that Chen discloses optimizing the location of in-mold injection port to minimize the flow time for an in-mold coating composition to flow over at least a part of a molded article on page 3, col. 2, section "Filling Pattern." The section cited by the Examiner describes a way to approximate the fill pattern by assuming an injection into a gap equal to the difference between uncompressed and compressed substrate thickness. Although Chen does describe a process for predicating fill patterns, Chen does not disclose using said pattern to determine optimal placement of a coating injection nozzle so as to minimize the flow for an in-mold coating composition to flow over at least a part of a molded article and to reduce the presence of surface defects of a coating formed from said in-mold coating composition. On page 2, column 1, paragraph 1, Chen teaches the need for a mathematical model to predict, among other things, the fill pattern to minimize the potential for trapping air. A simple mention of "fill pattern" in Chen does not necessarily mean that it is being used in the same or similar way to the present invention. In Chen, there is no evidence that the fill pattern being used to optimizes the placement of a coating injection nozzle.

Chen fails to disclose placing the injection nozzle in optimal placement positions, or indicate how one would do so. Chen includes various formulas for determining factors such as pressure, flow rate and thickness; however, no explanation of how such factors are used is provided. Chen discusses various factors that may contribute to optimization of the in-mold injection process, not factors contributing to discovering an optimal nozzle location.

Further, on page 2, col. 2, section "Filling Stage," Chen describes approximating flow as one-dimensional, and then explains that [they] are in the process of extending the model to real parts. Therefore, the process described in Chen was not adaptable to two-dimensional parts. Claim 20 of the present invention states, "predicting a coating composition fill pattern in said mold over at least a two dimensional surface." Chen clearly states that such a feature was not

within their teaching, nor is there any evidence presented that the process described in Chen can be adapted to two dimensional situations.

Furthermore, as amended, claim 20 recites, "a method for optimizing the location of an in-mold coating injection port in a mold so as to minimize the flow time for an in-mold coating composition to flow over at least a part of a molded article, said method comprising the steps of...using said method in conjunction with a method to minimize a cure time of the in-mold coating composition." On the top of page 2, col. 1, Chen describes various mathematical models including the cure time (cycle time); however, Chen does not disclose a method to minimize cure time. In the section "Curing Stage" on page 3, Chen describes the effect of injecting the IMC at different times in the cooling stage has on the cure time. At no point does Chen describe a method to lower the cure time in conjunction with a method for optimizing the location for an in-mold injection port.

For at least the reasons stated above, it is respectfully submitted that Chen fails to teach all of the features of the Applicant's invention; therefore, Applicant submits that the subject application is patentable in view of the cited art. It is respectfully requested that the rejection of independent claim 20 (and claims 27-29 that depend therefrom) be withdrawn.

II. Rejection of Claims 11-14 and 17-19 Under 35 U.S.C. 103(a)

Claims 11-14 and 17-19 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Chen in view of Ladeinde (A Procedure for Advection and Diffusion in Thin Cavities, Computational Mechanics 15 (1995) pp. 511-520, Springer-Verlag, 1995). It is respectfully requested that this rejection be withdrawn for at least the following reason. Chen in view of Ladeinde does not, individually or in combination, teach each of the of limitations independent claim 11 (as well as claims 12-14 and 17-19 that depend therefrom).

First, the Examiner alleges Chen teaches a method for optimizing the location of an in-mold coating injection point in a mold so as to minimize the flow time for an in-mold coating composition to flow over at least a part of a molded article. As discussed in Section I above, Chen is directed to the optimization of the process of thermoplastic injection molding; however, does not suggest that a factor in the optimization is the location of the in-mold coating injection point. Chen further does not teach using the predicted coating composition fill pattern to determine the optimal placement of a coating injection nozzle. Also consistent with the

discussion in Section I, claim 11 has been amended to recite “a method for optimizing the location of an in-mold coating injection port in a mold so as to minimize the flow time for an in-mold coating composition to flow over at least a part of a molded article, said method comprising the steps of...using said method in conjunction with a method to minimize a cure time of the in-mold coating composition.” As explained above, Chen fails to describe a method to lower the cure time in conjunction with a method for optimizing the location for an in-mold injection port.

Second, the Examiner admits that Chen does not teach using a finite difference method; however, the Examiner points to Ladeinde as providing the teaching of using a finite difference method comprising the steps included in claim 11. The Examiner alleges that the combination of Chen and Ladeinde would have been obvious to one of ordinary skill in the art since Ladeinde’s teachings would have controlled non-linear instability.

Applicant respectfully submits that this is an inappropriate basis to support the combination of Chen and Ladeinde. Applicant asserts that there is no suggestion to combine the teachings and suggestions of Chen and Ladeinde, except from using Applicant’s invention as a template through a hindsight reconstruction. Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning to support the legal conclusion of obviousness. The Examiner’s statement that it would have been obvious to combine the Chen and Ladeinde reference since Ladeinde would have controlled non-linear instability is merely a conclusory statement. There is no teaching in Chen that would support this conclusion.

For all the foregoing reasons, it is respectfully submitted that claim 11, as well as claims 12-14 and 17-18, that depend therefrom, are patentable over Chen in view of Ladeinde. Applicant respectfully requests the withdrawal of the rejection.

III. **Rejection of Claims 15-16 Under 35 U.S.C. 103(a)**

Claims 15 and 16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chen in view of Ladeinde and further in view of Walsh (U.S. Pat. No. 6,099,162). Applicant respectfully traverses the rejection for at least the following reason. Claims 15 and 16 include all the limitations of and depend from allowable claim 11 and are believed to be in allowable condition for the reasons hereinbefore discussed with regard to claim 11. Furthermore, Walsh

does not make up for the insufficiencies of Chen and Ladeinde. Reconsideration and withdrawal of the rejection is respectfully requested.

IV. Rejection of Claim 21 Under 35 U.S.C. §103(a)

Claim 21 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Chen in view of Ladeinde. Applicants respectfully traverse the rejection. Claim 21 includes all of the limitations and depends from claim 20, and is believed to be in condition for allowance for the reasons hereinbefore discussed. Applicant respectfully requests withdrawal of the rejection.

V. Rejection of Claims 22-24 Under 35 U.S.C. §103(a)

Claims 22-24 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Chen as applied to claim 20 and further in view of Zuyev (Optimizing Injection Gate Location and Cycle Time for the In-Mold Coating (IMC) Process, Antec 2001). Applicant respectfully disagrees with the Examiner. Claims 22-24 include all the limitations of and depend from allowable claim 20 and are believed to be in allowable condition for the reasons hereinbefore discussed with regard to claim 20. Zuyez does not make up for the insufficiencies of Chen; therefore, reconsideration and withdrawal of the rejections is requested.

VI. Rejection of Claims 25-26 Under 35 U.S.C. §103(a)

Claims 25-26 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Chen in view of Zuyez as applied to claim 23 and further in view of Walsh. Applicant respectfully disagrees with the Examiner. Claims 25-26 include all the limitations of and depend from allowable claim 20 and are believed to be in allowable condition for the reasons hereinbefore discussed with regard to claim 20. Walsh does not make up for the insufficiencies of Chen and Zuyez as set forth in Section VII above concerning claim 22-24; therefore, reconsideration and withdrawal of the rejections is requested.


VII. **CONCLUSION**

For the reasons detailed above, it is respectfully submitted all claims remaining in the application (Claims 11-18, 20-28, 30-35) are now in condition for allowance.

Respectfully submitted,

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May 19, 2008
Date



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Certificate of Electronic Transmission

I hereby certify that this Amendment is being filed on the date indicated below by electronic transmission with the United States Patent and Trademark Office via the electronic filing system (EFS-Web).

5/19/08

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Georgeen B. Sonntag

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